[*a*, Welsh Pony; *b*, Shetland Pony; *c*, Cart-Horse; *d*, Hunter; *e*, Racer.]

BRITISH HORSES.

The primitive origin of the domestic horse is unknown; probably does not exist. The troops of wild horses which scour the deserts of Tartary are regarded by naturalists, and with justice, as the descendants of a domesticated stock; and the herds of horses which feed in the plains of South America are confessedly derived from horses introduced by the Spaniards, according to Azara, in 1535.

The circumstances attending the subjugation of the wild horse, and the epoch at which this was accomplished, are equally obscure.

It is generally supposed that the Egyptians were the first who reclaimed this animal; they appear, however, to have employed it only in warfare, camels and asses being used as ordinary beasts of burden. It must be observed that the opinion in question is founded on the circumstance of the horse being first noticed in Scripture as a domestic animal in Egypt, exclusively; and from the fact that at a subsequent period Egypt supplied Solomon with horses; but at what period or by what people it may be that the horse was first subjugated, it rapidly spread over Asia, Europe, and the northern districts of Africa; and at some early period, probably by the Celtic tribes gradually pushing their westward course, it reached the British Islands.

When Julius Cæsar invaded our shores, he was opposed not only by infantry, but by horsemen and charioteers; and the skill with which the horses were managed

excited admiration, a circumstance sufficient to prove a long acquaintance with this animal. Historians have called the Celtic natives of Britain barbarians, and represented them as being as low in the scale of civilization as the natives of New Zealand before European enterprise and philanthropy had attempted their amelioration. But the possession of flocks and herds, of trained horses, some for carrying armed men, others for drawing war-chariots, and in both cases managed with the utmost address, proves, independently of other considerations, that the Britons in Cæsar's time were considerably advanced in social refinement.

We do not know with certainty the characters of the ancient British horse; yet, from the rapid movements of the cavalry, and the manner in which the charioteers dashed along, we may readily conjecture that the horses were both light and strong, docile and spirited. Probably they were not of very large size, yet they were highly valued, and were imported, together with British mastiffs, to Rome.

During the dominion of the Romans in Britain, it is probable that the original characters of the British horse became modified by the intermixture of the race with other breeds imported by the conquerors from Italy, Gaul, and Spain; but to what extent this admixture took place we have no means of ascertaining. After the departure of the Romans, the disturbed state of Britain would forbid any attempts at improving the horse, or maintaining a pure and high-spirited breed distinguished above others; yet that such a breed existed there can be little doubt, since Athelstane (A.D. 930) forbade the exportation of horses under any pretence, except as presents to monarchs, a circumstance which suffices to prove that the British, or rather English horse, was then valued on the Continent. It would appear also that in addition to the desire of Athelstane to preserve the native breed, he endeavoured to improve it; and we are informed that he received several German *running horses*, that is, horses formed for speed, from Hugh Capet of France. The Saxons indeed held the horse in high estimation, and the banner of the King of Kent displayed a white horse as the royal cognizance.

The Norman conquest was productive of changes in our English breed, resulting from the introduction of the Spanish horse by some of the barons upon the estates which they had acquired by the right of the sword.

The Crusades brought the English into contact with the noble horses of Arabia and Syria; and there is little doubt but that many of these were brought to our country to the further improvement of our breeds. Two horses of Eastern origin, and purchased at Cyprus, were possessed by Richard Cœur-de-Lion, and are celebrated as unequalled for swiftness. In the reign of John, who, as Rapin observes, possessed scarcely "one valuable qualification," chosen horses were introduced by his direction from Flanders, for the purpose of improving the breed of draught-horses; and that monarch himself accumulated an extensive stud of the most superb horses to be found.

During subsequent reigns, Spanish barbs, Lombardy war-horses, and heavy Flanders horses were obtained. Thus gradually three sets or breeds of horses became established, exclusive of the pony, which from time immemorial has inhabited the districts of Wales, the mountain parts of Scotland, and the Shetland Isles.

Of these breeds one was appropriated for war. Before the invention and ordinary use of fire-arms, knights and horse-soldiers were clad in heavy mail, oppressive to the wearer, but more so to the horse, which was also to a great degree protected in the same manner, especially on the head, neck, and chest. The principal requisite of the war-horse was strength, not however to the exclusion of a certain degree of fleetness. The old war-horse, therefore, was a powerful bony animal, of great spirit, and capable of enduring fatigue; that his figure and action were noble, we have abundant testimony.

Besides this stalwart breed, there was evidently a lighter race, fitted for ordinary purposes—a race of moderate stature, and in which fleetness and strength were more equally combined. Horses of this kind were termed running horses; they were used as hackneys, and also for running races—a sport practised at Smithfield as early as the time of Henry II., though racing was not then what it is in modern days.

The third breed was heavier and slower than the war-horse, and was used for the purpose of draught. This breed, overlooked by the nobles, would necessarily vary in its qualities as circumstances might influence it; but in proportion as the war-horse and hackney improved, so this breed would in an indirect manner partake of the improvement. It is to the introduction of the heavy Flanders horse that its perfection is attributed.

We have alluded to a rude trial of the speed of horses practised at Smithfield as early as the time of Henry II., and it is probable that similar trials were periodically conducted at other places. In the reign of Henry VIII., and especially of Elizabeth, regular race meetings were established at Chester, Stamford, and elsewhere, but we are not to suppose the horses to have been anything like the racers of the present day. They were merely active and fleet hackneys; and the rules and regulations of the turf, as now instituted, were unknown. The passion for this sport, however, gradually increased. In the reign of James I., who encouraged racing both in England and Scotland, it assumed a more definite character, and became guided by rules, to which those who entered into the sport subscribed. To James I. is due the introduction of the Arab horse for the specific object of improving the racer; and one which he purchased from a merchant of the name of Markham, for the then enormous sum of 500*l.*, has been highly celebrated.

In the time of Charles I. Turkish and Barbary horses of great value were introduced, nor was the racing stud altogether neglected by Cromwell.

Under Charles II. a new impulse was given to the sport, and many Barbary and Turkish horses were acquired for the purpose of still further improving the racer. And in the reign of Anne, the introduction of the celebrated Arabian horse, by Mr. Darley (and hence called the Darley Arabian), contributed to the establishment of a breed of horses of pure blood and unequalled fleetness.

The Darley Arabian was bred in the deserts of Palmyra, and from him, as their sire, have sprung the best and most celebrated of our modern racing stock. He was the parent of the Flying Childers, Bartlett's Childers, Almanzor, &c., and from these again have descended various branches, all excellent, traceable to the Darley Arabian. Subsequently to the introduction of the Darley Arabian, Lord Godolphin became possessed of a Barb (called the Godolphin Arabian), celebrated not only for its excellence, but for its friendship with a cat. From this horse descended a celebrated stock, to which other Eastern horses, as the Wellesley Arabian, &c., have also contributed. Such then is the origin of the English racer; and in no part of the world can horses be found of equal spirit, power, and fleetness.

The modern hunter, which combines the qualifications of speed and endurance, is a remove from the pure-blood racer in the first degree; a first-rate hunter is generally three-fourths bred, as it is termed. The product of a superior Cleveland mare (a strong useful breed for "all work") and a thorough-bred horse, or racer, or even a three-fourths bred horse, will often

prove a fair hunter; but the product again of this and a pure-blood horse, we apprehend to constitute the hunter *par excellence*. The eagerness with which this noble animal enters into the exciting sport of the chase, and its strength and power of endurance, are well known.

The road-horse, or hackney, formerly constituted a race by itself, allied to the hunter, and not destitute of some of the hunter's blood, but of more compact form and more robustly built. In the present day, however, long journeys on horseback are seldom attempted, and a light half-bred horse is generally preferred for the saddle. The coach-horse and the best breeds for light carriages and chaises are a product of the Cleveland and the hunter of high blood.

If England is celebrated for its racers, hunters, and useful horses for the saddle and light-draught, it is no less so for its heavy-draught horses. Of these the lightest, but one of the strongest, is the Cleveland bay. This race is confined principally to Durham and Yorkshire. Another valuable stock is the Suffolk punch, now nearly extinct, or rather crossed with others. The heavy Lincolnshire black is also celebrated, and exceeds all in size. It is of animals of this breed that the teams in the brewers' and distillers' carts in London are chiefly composed; and no one can behold them without being struck with their noble appearance. Their strength is prodigious; but, from their great weight, their action is slow, and at hard and continued work they would be beaten by well-built muscular horses of less size. Most of these horses exceed seventeen hands in height. Both the Suffolk and the Lincolnshire breeds have been of late years much crossed by the Flanders breed, — to the improvement of both, certainly of the latter. In this cross, the size and bulk of the original Lincolnshire is still retained, but the fore-hand, as Mr. Youatt observes, has been raised, the legs flattened and deepened, and much consequently gained in activity. "The slow heavy black, with his two miles and a half an hour, has been changed into a lighter but still exceedingly powerful horse, who will step four miles in the same time with perfect ease, and has considerably more endurance."

From these elephantine horses, to the Welsh and Shetland ponies, the transition with respect to size is so great, that we are almost startled by the comparison, and wonder that such a difference can exist between two individuals of the same species.

Wales and the Shetland Isles have been ever celebrated for miniature horses, of great beauty, spirit, strength, and hardiness.

The Welsh pony is often a model: a small head, high withers, a deep yet round body, short joints, flat legs, and small round hoofs characterise him; his ears are small, his eye is full and animated, and his actions are free and vigorous. The Shetland pony is still less in size than the Welsh, and is often very handsome, but the shoulders are usually low and thick, the limbs, however, are well knit, and the strength of the animal in proportion to its size is astonishing. Mr. Youatt states that one of these little creatures, only nine hands high, carried a man of twelve stone forty miles in one day.

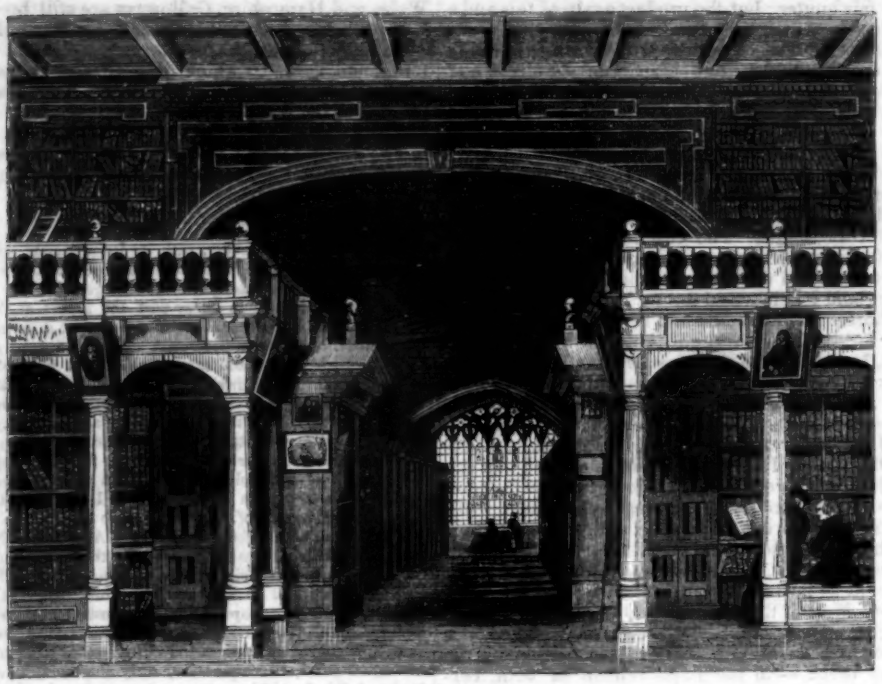
Some years since (June, 1831) we measured a pony of the Shetland breed, of very small dimensions, but very beautiful. Its height, at the shoulders, was only thirty-four inches. Its length, from between the ears to the insertion of the tail, following the curve of the neck and back, four feet two inches.

Ponies of different degrees of value range the New Forest, Exmoor, and the Highlands of Scotland. A beautiful Galloway (or large pony, about thirteen or fourteen hands high), said to be of Spanish extraction, was once common in the south of Scotland, bordering Solway Frith; it is, however, greatly degenerated. In Wales and Hampshire, Galloways are still bred, but of late years this intermediate race has been neglected.

To enter into all the breeds and crosses of the different stocks into which the English horse seems primarily resolvable is impossible. They are as numerous as the fancy and the judgment of the breeder can make them.

The group at the head of this article represents the Shetland and the Welsh pony, the draught horse, the hunter, and the racer.

Nuremberg.—Nuremberg, with its long, narrow, winding, involved streets, its precipitous ascents and descents, its completely Gothic physiognomy, is by far the strangest old city I ever beheld; it has retained in every part the aspect of the middle ages. No two houses resemble each other; yet differing in form, in colour, in height, in ornament, all have a family likeness; and with their peaked and carved gables, and projecting central balconies and painted fronts, stand up in a row, like so many tall, gaunt, stately old maids, with the toques and stomachers of the last century. The buildings are so ancient, the fashions of society so antiquated, the people so penetrated with veneration for themselves and their city, that in the few days I spent there, I began to feel quite old too—my mind was *wrinkled up*, as it were, with a reverence for the past. I wondered that people condescended to talk of any event more recent than the Thirty Years' War and the defence of Gustavus Adolphus. Nuremberg was the Gothic Athens; it was never the seat of government; but as a free imperial city it was independent and self-governed, and took the lead in arts and literature. Here it was that clocks and watches, maps and musical instruments, were manufactured for all Germany; here were music, poetry, and painting at once honoured as sciences and cultivated as handicrafts, each having its guild, or corporation, duly chartered, like the other trades of this flourishing city, and requiring, by the institution of the magistrates, a regular apprenticeship. It was here that, on the first discovery of printing, a literary barber and meistersinger (Hans Foltz) set up a printing-press in his own house; and it was but the natural consequence of all this industry, mental activity, and social cultivation, that Nuremberg should have been one of the first cities which declared for the Reformation. But what is most curious and striking in this old city is to see it stationary, while time and change are working such miracles and transformations everywhere else. The house where Martin Behaim, four centuries ago, invented the sphere, and drew the first geographical chart, is still the house of a mapseller. In the house where cards were first manufactured, cards are now sold. In the very shops where clocks and watches were first seen, you may still buy clocks and watches. The same families have inhabited the same mansions from one generation to another, for four or five centuries. The great manufactories of those toys called Dutch toys are at Nuremberg. The enormous scale on which this commerce is conducted, the hundreds of waggon-loads and ship-loads of these trifles and gimcracks which find their way to every part of the known world, must interest a thinking mind. A Nuremberger complained to me most seriously of the falling off in the trade of *pill-boxes!* he said that since the fashionable people of London and Paris had taken to paper pill-boxes, the millions of wooden or chip boxes which used to be annually sent from Nuremberg to all parts of Europe were no longer required; and he computed the consequent falling off of the profits at many thousand florins. The extraordinary cemetery of Nuremberg is as unlike every other cemetery as Nuremberg is unlike every other city. Imagine, upon a rising ground, an open space of about four acres, completely covered with enormous slabs, about a foot and a half in thickness, seven feet in length, and four in breadth, laid horizontally, and just allowing space for a single person to move between them. The name and the armorial bearings of the dead, in rich sculpture, or sometimes cast in bronze, decorated these tombs. I remember one to the memory of a beautiful girl, who was killed, as she lay asleep in her father's garden, by a lizard creeping into her mouth. The story is represented in bronze bas-relief, and the lizard is so constructed as to move when touched. From this I shrunk with disgust, and turned to the sepulchre of a famous worthy, who measured the distance from Nuremberg to the Holy Sepulchre with his garter: the implement of his pious enterprise, twisted into a sort of true-love knot, is carved on his tomb.—*Visits and Sketches at Home and Abroad, by Mrs. Jameson.*



[Interior of the Bodleian Library.]

THE BODLEIAN LIBRARY.

SIR THOMAS BODLEY, from whom the Bodleian or Public Library at Oxford takes its name, was the eldest son of Mr. John Bodley of Exeter, by Joan, daughter and heiress of Robert Home, Esq., of Ottery St. Mary. He was born at Exeter, March 2, 1544. He was about twelve years of age when his father, being obliged to leave England on account of religion, settled with his family at Geneva, where he lived a voluntary exile during the reign of Queen Mary. Upon the accession of Queen Elizabeth, in 1558, he returned to England with his father and family, who settled in London, and was soon after sent to Magdalen College, Oxford, where he was placed uner the tuition of Dr. Humphrey, afterwards president of that society. In 1563 he took the degree of B.A., was chosen probationer of Merton College the same year, and the year following was admitted fellow. In 1566 he took the degree of M.A., and in the same year read natural philosophy in the public schools. In 1569 he was elected one of the proctors of the University, and after that, for a considerable time, supplied the place of University orator. In 1576, being desirous to improve himself in the modern languages, and to qualify himself for public business, he began his travels, and passed nearly four years in visiting France, Germany, and Italy. Afterwards, returning to his college, he applied himself to the study of history and politics. In 1583 he was made gentleman usher to Queen Elizabeth, and in 1585 married Anne, daughter of Mr. Carew of Bristol, and widow of Mr. Ball, a lady, as Wood informs us, of considerable fortune. Soon after, he was employed by Queen Elizabeth in several embassies to Frederic, king of Denmark, Julius, duke of Brunswick, William, landgrave of Hesse, and other German princes, to engage them to join their forces with those of the English for the assistance of the king of Navarre, afterwards Henri IV. of France; and having discharged that commission, he was sent to King Henri III., at the time when that prince was forced by the Duke of Guise to quit Paris. In 1588 Mr. Bodley was sent to the Hague to manage the queen's affairs in the United Provinces, where, according to an agreement between the queen and the States, he was admitted one of the Council of State, and took his place next to Count Maurice, giving his vote in every proposition made to that assembly. In this station he behaved greatly to the satisfaction of his royal mistress and the advancement of the public service. After nearly five years' residence in Holland, Mr. Bodley obtained leave to return into England to look after his private affairs, but was shortly afterwards remanded back to the Hague. At length, having succeeded in all his negotiations, he obtained his final recall in 1597. After his return, finding his advancement at court obstructed by the jealousies and intrigues of the great men, he retired from it and from all public business, and never could be prevailed upon to return or to accept any new employment. In the same year he set about the noble work of restoring, or rather, founding anew the public library at Oxford, which was completed in 1599. After King James's accession to the throne, Sir Thomas Bodley received the honour of knighthood. He died the 28th of January, 1612, and was buried with great solemnity at the upper end of Merton College choir.

The first public library in Oxford was established in what was then called Durham (since Trinity) College, by Richard de Bury, or Aungerville, bishop of Durham and lord treasurer of England, in the time of Edward III. He died in 1345, and left his books to the students of Durham College, who preserved them in chests, until the time that Thomas de Hatfield, his successor in the see of Durham, built the library in 1370

The next we read of was called Cobham's Library, which would have been the first, if Thomas Cobham, bishop of Worcester, had lived to have executed his own purpose. About the year 1320 he began to make

some preparations for a library over the old Congregation-House, in the north church-yard of St. Mary's; but, dying soon after, little progress was made in the work till 1367, when his books were deposited in it, and the scholars permitted to consult them on certain conditions. But the property of the site being contended between the University and Oriel College, the dispute was not finally determined till 1409, when the room was fitted up with desks, windows, &c., by the benefactions of King Henry IV., of his four sons Henry, Thomas, John, and Humphrey, of Thomas Arundel, archbishop of Canterbury, Philip Repindon, bishop of Lincoln, Edmund, earl of March, and Richard Courtney, chancellor of the University, in whose time it was completed, about the year 1411. This appears to have been the first public library, and continued in use until 1480, when the books were added to Duke Humphrey's collection, for the reception of which a library-room had been completed.

Humphrey, surnamed the Good Duke of Gloucester, a man superior to the age in which he lived, was the real founder of the library which was afterwards restored and refounded by Sir Thomas Bodley. The number of books given by Duke Humphrey is variously represented. Wood (*Hist. and Antiq. of the Univ. of Oxford*, vol. ii., pt. ii., 4to., Oxford, 1796, p. 715) says the different treatises amounted to six hundred: one only specimen at present remains, a manuscript, in folio, of Valerius Maximus, enriched with the most elegant decorations, and written in Duke Humphrey's age, evidently with the design of being placed in his sumptuous collection. The rest of the books, which, like this, being highly ornamented, and looking like missals, were supposed to convey ideas of Popish superstition, were destroyed or removed by the visitors of the University in the time of Edward VI., whose zeal was equalled only by their ignorance. A manuscript commentary on Genesis, by John Capgrave, belonging to Duke Humphrey's library, is still preserved in that of Oriel College, Oxford; and one if not more manuscripts formerly belonging to the collection are in the British Museum; most of them, at the end, had usually this inscription written in the Duke's own hand: "C'est livre est a moy Humfrey Duc de Gloucestre." Before the year 1555 the Duke of Gloucester's Library was totally despoiled of its contents, and the desks and benches ordered to be sold; the room continued empty until restored by Sir Thomas Bodley.

It was in 1597 that, as Camden justly observes, Sir Thomas Bodley set himself a task which would have suited the character of a crowned head—the restoration of the Public Library. With this view he sent a letter from London to the vice-chancellor Dr. Ravis, dean of Christ Church, offering to restore the building and settle a fund for the purchase of books, as well as the maintenance of proper officers. This offer being gladly accepted, he commenced his undertaking by presenting a large collection of books purchased on the Continent, and valued at £10,000. Other collections and contributions were sent in, by his example and persuasions, from various noblemen, clergymen, and others, to such an amount, that the old building was no longer sufficient to contain them. He then proposed to enlarge the building; and the first stone of the new foundation was laid with great solemnity, July 17, 1610, and so amply promoted by his liberality, as well as by the benefactions of many eminent persons, that the University was enabled to add three other sides, forming the quadrangle and rooms for the schools, &c. He did not, however, live to see the whole completed, as the time of his death, already recorded, will explain

When Sir Thomas Bodley had succeeded in enriching his collection, probably far beyond his expectation, he drew up a body of statutes, which have been since incorporated with those of the University. According to them, the librarian is to be a graduate, unmarried, and without cure of souls; and to be allowed deputies or assistants. One or two points in these regulations have been since altered; the librarian is allowed to marry, and he can hold parochial preferment with his librarianship. The revenues for the maintenance of the library are intrusted to the vice-chancellor and proctors for the time being; and the vice-chancellor and proctors, the three professors of divinity, law, and physic, and the two regius professors of Greek and Hebrew are appointed visitors.

Several catalogues of the books in the library have been published; the last general catalogue in 1738; but from the immense increase of the collection it has become but of little use. Another was undertaken a few years ago, and had proceeded, under the direction of the present librarian, Dr. Bandinel, to some extent in the printing; but we are informed that the publication has been since abandoned. A few catalogues of particular portions of the Bodleian collections have also been published at different times. The curators of the Bodleian have for many years published, or rather printed and distributed, and continue to print and distribute, annual alphabetical catalogues of its acquisitions in the department of printed books, for the information of the University.

An annual speech in praise of Sir Thomas Bodley was founded in 1681, by Dr. John Morris, canon of Christ Church; the speaker to be nominated by the dean of Christ Church, and confirmed by the vice-chancellor. These speeches are delivered at the visitation-day of the library, November the 8th.

It would require a volume to enumerate the many important additions, in books and manuscripts, made to this library by its numerous benefactors, or to give even a superficial sketch of its ample contents in every branch of science and learning. Among the earliest benefactors were Robert Devereux, earl of Essex, Thomas Sackville, lord Buckhurst and earl of Dorset, Robert Sidney, lord Sidney of Penshurst, viscount Lisle and earl of Leicester, &c. &c. The most extensive and important collections, however, are those of the Earl of Pembroke, the celebrated Mr. John Selden, Archbishop Laud, Sir Thomas Roe, Sir Kenelm Digby, General Fairfax, Dr. Marshall, Dr. Barlow, bishop of Lincoln, Dr. Richard Rawlinson, Mr. St. Amand, Bishop Tanner, Browne Willis, Thomas Hearne, Mr. Nathaniel Crynes, and Mr. Godwin. The library bequeathed by Richard Gough, Esq., which came to the Bodleian in 1812 (the catalogue of which has been already noticed), is perhaps the most perfect series of English topographical works ever formed, and is particularly rich in topographical manuscripts, prints, drawings, and books illustrated by the manuscript notes of eminent antiquaries. The last collections of great importance bequeathed to the Bodleian have been those of Edmond Malone, Esq., in 1812, and of Francis Douce, Esq., in 1834.

The Bodleian Library was first opened to the public on November 8th, 1602, and by the charter of mortmain obtained of King James, Sir Thomas, then lately knighted by him, was declared founder; and, in 1605, Lord Buckhurst, earl of Dorset, and chancellor of the University, placed the bust of Sir Thomas in the library.

Since the year 1780 a fund of more than £400 a year has been established for the purchase of books. This arises from a small addition to the matriculation fees, and a moderate contribution annually from such members of the University as are admitted to the use of the library, or on their taking their first degrees; to

which is to be added the privilege claimed as a matter of right, under the Copyright Act, of a copy of every book printed in Great Britain and Ireland.

All members of the University who have taken a degree are admitted to study in the library; no books have ever been suffered to be taken from it. Literary persons, either native or foreign, are also allowed, on being properly recommended, to read and take extracts from the books in this collection. By the provisions of a statute promulgated and confirmed in full convocation, December 2, 1813, the officers of the library were increased to a principal librarian, two under-librarians, with the degrees of M.A. or B.C.L. at least, and two assistants, either B.A. or under-graduates. The library is open between Lady-day and Michaelmas, from nine in the morning till four in the afternoon; and during the other half-year from ten till three. It is closed on Sundays and state holidays; from Christmas-eve to the 1st of January inclusively; on the feast of the Epiphany; from Good Friday to Easter Tuesday inclusively; on the days of Encænia and commemoration; seven days immediately following the 1st of September; and eight days preceding the visitation of the library. On all other holidays it is opened immediately after the University sermon.

Sir Thomas Bodley wrote his own life to the year 1609, which, together with the first draft of his statutes for his library, and a collection of his letters, were published from the originals in the Bodleian by Thomas Hearne, under the title of 'Reliquiæ Bodleianæ, or some genuine Remains of Sir Thomas Bodley,' 8vo., Lond., 1703. The Life alone had been previously published in 4to., Oxford, 1647.

Materials exist for an extended Life of Sir Thomas Bodley in his public capacity, in several of our libraries, more especially in the Cottonian and Harleian collections of manuscripts in the British Museum, and among the Bacon papers in the Archiepiscopal Library at Lambeth.

CHAUCER'S PORTRAIT GALLERY.

THE DOCTOR OF PHYSIC.

In the elaborate portrait which the poet has given us of this member of the Canterbury pilgrimage, we have a striking exemplification of the state of medical science in the fourteenth century, and of the qualifications requisite for the attainment of eminence in the profession. It is said of this—

> "——————— Doctor of physic,
> In all this world ne was there none him like
> To speak of physic and of surgery;
> For he was grounded in astronomy.
> He kept his patiént a full great deal
> In hourés by his magic natural.
> Well could he fortunen* the ascendant
> Of his imáges for his patiént.

By "astronomy" we must rather understand astrology, the two being more or less confounded in the history of science down even to a much later period than that of Chaucer. In astrology, then, the heavens were divided into twelve parts or houses: of these the most important was the first, containing the part of the heavens about to rise, hence called the ascendant, and which had influence on all matters concerning life. According to the planet which came into conjunction with the "ascendant" at the time of any particular crisis in the "patient's" disease, depended the latter's chance of recovery. If we understand Chaucer rightly, therefore, the "magic natural" was brought in by the physician to enable him to choose the most favourable "houres" for bringing on that crisis, and for the adoption of whatever means were thought most desirable.

The art of medicine, if art it might be called at this time in England, was borrowed from ancient Greece, with such improvements only as may have been made in it by the Arabs, who translated the principal Grecian writers into their language, and became during the seventh and five following centuries the most eminent practitioners in the world. As an evidence of their great reputation it may be observed that Sancho the Fat, king of Leon, went in person, in 956, to Cordova, the then great capital of Moorish Spain, to be cured of an illness. Not long before Chaucer's time the works of the principal Greek and Arabic writers, having been translated into Latin, found their way into this country, and so formed the basis of that art which now (cleared of the superstitions in which it was formerly embedded) stands pre-eminently forward as one of the greatest blessings of civilization. About the period of the 'Canterbury Tales,' these superstitions existed in full vigour. A physician who was no astronomer would then have been looked upon, we presume, as a quack of modern days; ignorance, in both cases, of the knowledge indispensable to the successful cultivation of the art being presumed. Thus we find that Hugo de Evesham (of Worcestershire), who studied not only at both the universities of England, but subsequently at those of France and Italy also, and who became the most famous physician of his day—he too, we find it recorded, was scarcely less distinguished for his mathematics and astronomy. Again, his great contemporary Roger Bacon, far-sighted, and singularly unprejudiced to existing opinions as he was, remarks, in his 'Opus Major,' that *astronomy is the better part of medicine.* Charles V. of France, who directed his every movement by the advice of his astrologers, established a college of medicine and astrology in the university of Paris. In the continuation of the 'Canterbury Tales,' before referred to, under the title of the 'Tale of Beryn,' we find a surgical operation on the eyes performed by the assistance of the occult sciences.

> "The whole science of all surgery
> Was undyd, or the chaunge was made of both eye
> With many sotill enchantours and eke negrymauncers
> That sent were for the nonis,* maistris and scoleris."

Lastly, we may observe that Persia, even to this day, abounds with physicians and astrologers; and a Persian rarely follows the prescriptions of the one class without first ascertaining from the other that the constellations are favourable to the proposed remedy. Yet we must not suppose, after all, that our ancient physicians relied on the virtue of these heavenly influences, to the neglect of more substantial medical knowledge or skill. Chaucer's 'Doctor of Physic,' for instance, besides being so well "grounded in astronomy"—

> "Knew the cause of every malady,
> Were it of cold or hot, or moist or dry,
> And where engendered and of what humoúr:
> He was a very perfect practisour.
> The cause yknow,† and of his harm the rote
> Anon he gave to the sick man his bote.‡
> Full ready had he his apothecaries
> To send him druggés and his lectuaries;
> For each of them made other for to win:
> Their friendship was not newé to begin."

Dr. Freind, in his 'History of Physic,' gives still more emphatic testimony to the same effect. He says, "Though we find the people of that age had great faith

* *Fortunen*—determine the good or bad fortune of.

* Nones—occasion. † Known. ‡ Remedy.

in charms and other empirical applications, yet the general practice was carried on chiefly in the rational way, as it had been delivered down from the Greeks." This subject receives further illustration from the description Chaucer gives us of the doctor's library:

> " Well knew he the old Esculapius,
> And Dioscorides, and eke Rufus;
> Old Hippocras, Hali, and Gallien,
> Serapion, Rhasis, and Avicen,
> Averroes, Damascene, and Constantine,
> Bernard, and Gatisden, and Gilbertine."

Of these authors, we need say nothing respecting old Esculapius, Hippocrates, Galen, or Dioscorides; as to the others, Warton, in his 'History of Poetry,' and Dr. Freind, furnish some not uninteresting particulars. Rufus, a physician of Ephesus, wrote in Greek, about the time of Trajan. Haly was a famous Arabic astronomer, and a commentator on Galen, in the eleventh century, which produced so many famous Arabian physicians, among others John Serapion, who wrote on the practice of physic, and Avicen, the most eminent of the number. Rhasis, an Asiatic physician, practised at Cordova in Spain, where he died in the tenth century. Averroes, as the Asiatic schools decayed by the indolence of the caliphs, was one of those philosophers who adorned the Moorish schools erected in Africa and Spain. He was a professor in the university of Morocco. John Damascene was secretary to one of the caliphs; he wrote on various sciences before the Arabians had entered Europe, and had seen the Grecian philosophers. Constantinus Afer, a monk of Cassino in Italy, was one of the Saracen physicians who brought medicine into Europe, and formed the Salernitan school (the first of the kind established in Europe), chiefly by translating various Arabian and Grecian medical books into Latin. His history is peculiarly interesting. He was born at Carthage, and learned grammar, logic, geometry, arithmetic, astronomy, and natural philosophy of the Chaldees, Arabians, Persians, Saracens, Egyptians, and Indians, in the schools of Bagdad. Being thus completely accomplished in these sciences, after thirty-nine years of study he returned into Africa, where an attempt was formed against his life. Constantine, having fortunately discovered this design, privately took ship, and came to Salerno in Italy, where he lurked some time in disguise. But he was recognised by the Caliph's brother, then at Salerno, who recommended him as a scholar universally skilled in the learning of all nations, to the notice of Robert, duke of Normandy. Robert entertained him with the highest marks of respect; and Constantine, by the advice of his patron, retired to the monastery of Cassino, where, being kindly received by the Abbot Desiderius, he translated in that learned society the books above mentioned, most of which he first imported into Europe. These versions are said to be still extant. He flourished about the year 1086.

Bernard, or Bernardus Gordonius, appears to have been Chaucer's contemporatory. He was a Professor of Medicine at Montpelier, and wrote many treatises on the art.

John Gatisden was a fellow of Merton College, where Chaucer was educated, about the year 1320. Dr. Freind gives an interesting account of him.* He was the author of a famous medical work called 'Rosa Anglica;' and though, to confess the truth, he was not much better than an empiric, yet he seems to be one of the best in that way, and manages his affairs with great address. He was, as it appears from his own writings, ingenious enough to see through the foibles of human nature; he could form a good judgment how far mankind could be imposed upon, and never failed to make his advantage of their credulity. He is very artful in laying baits for the delicate, for the ladies, for the rich. For the former he has such a tenderness that he condescends to instruct them even in perfumes and washes, especially some to dye their hair; and such a respect for the latter, that he is always studying to invent some of the most select and dearest medicines for them." He was also a poet. Scarce a page of his works but he quotes the verses of others or inserts his own. He was the first Englishman employed at court as a physician, and had the care of the king's son (a son of either Edward I. or Edward II.) in the small-pox. Here he played his game very well; and to show his skill in inflammatory disorders, he, with a proper formality and a countenance of much importance, ordered the patient to be wrapped in scarlet, and everything about the bed to be red; no doubt the room was hung in the same manner. This he says made him recover, without so much as leaving one mark upon his face. Whenever a scrofulous case does not submit to the sovereign remedies, such as the blood of a weazle or doves'-dung, he exhorts the person immediately to apply to the king for the royal touch. He acquaints us with his great skill in physiognomy; and did design, if God would give him life and leisure, to write a treatise of chiromancy, or fortune-telling.

"Gilbertine, I suppose," says Warson, "is Gilbertus Anglicus, who flourished in the thirteenth century, and wrote a popular compendium of the art, and was the first of his countrymen who enjoyed any repute in that way."

The distinction of the three regular orders into which the profession is now divided, was also known in Chaucer's time, as we perceive from the preceding passages, where it is stated that there were none like his doctor in the world to speak of *physic* or of *surgery*, and that he had his *apothecaries* full ready to send him his drugs. His very title also shows that degrees were granted thus early to proficients in medical education. That of Bachelor of Physic appears to have been conferred in Oxford soon after the Conquest. The remainder of Chaucer's description is occupied with those personal traits which exhibit the individual, as well as the class, so vividly, that it is impossible to avoid coming to the conclusion that Chaucer, like all other great painters, drew to a certain extent from the life. Could that sly bit of satire, "his study was but little in the Bible," have crept into the place it occupies, but that the *fact* caught the poet's eye as he glanced over the habits and person of the living Doctor of Physic, who stood before him unsuspicious of the immortality that awaited him?

> " Of his diét measúrable was he,
> For it was of no superfluity,
> But of great nourishing, and digestible.
> His study was but little in the Bible.
> In sanguine and in perse he clad was all,
> Lined with taffeta and eke sandal;
> And yet he was but easy of dispence,
> He kepté that he won in the pestilence:
> For gold in physic is a cordial;
> Therefore he loved gold in special."

The wit of this last couplet is enhanced by our knowledge of the truth of the notion on which it is founded. The great philosopher before mentioned, Bacon, gives broad hints, in his work 'On the Accidents of Old Age,' about a tincture of gold which might contribute greatly to prolong life; and he recites a remarkable story of an old Sicilian ploughman, who, by drinking greedily of a yellowish stream (which our author suspects was impregnated with gold), grew young again, and lived many years in full vigour.

The dress of "sanguine" and "perse" is illustrated

* Vol. ii., p. 277-292.

in the Sutherland manuscript by a surcoat of *bright purple*, and a *blue* hood covering the head and extending low down upon the shoulders, deeply furred with white. His stockings are also of bright purple. The Doctor is here represented as pondering over the contents of a large phial.

THE THERMOMETER.

IN the Monthly Supplements of our last year's volume, among the meteorological phenomena recorded in the almanac, are the average indications of the thermometer for each month; thus, in October, we find it stated that the mean temperature is 42·9°, the highest 62°, and the lowest 23°. We will endeavour to give a popular account of the phenomena involved in these indications of the thermometer; in the same manner as we lately did with respect to the barometer.

It may naturally be supposed, that before we can understand the action of a heat-measurer (which is the precise meaning of the word 'thermometer'), we ought to be familiar with the nature of the thing measured. But the truth is, that notwithstanding the investigations and experiments made by men of science, we know but little respecting heat except by its *effects*. Some think that it is a very subtle and attenuated fluid, capable of passing out of one substance into another; while others suppose it to be merely a vibration or intestinal motion among the particles of which bodies consist. We may therefore at once pass over this matter, as one still in dispute, with the remark that so far as popular notions are concerned, it seems most convenient to deem heat a fluid capable of transference from body to body.

Of the various effects which heat exerts on ordinary substances, some are familiar to us in our every-day experience, and others are only manifested by the careful experiments of philosophers; but the only effect which need be considered in this article is that of *expansion*, or that property by which a body enlarges in bulk according as its temperature becomes higher, or, in common parlance, according as it has more heat in it. This is the property on which the action of the thermometer depends.

If we have a small cylinder of metal which, when cold, precisely fits into a hole in another piece of metal, the cylinder, when heated, will no longer enter the hole or tube, the diameter having been increased by the process of heating. Or if we have an iron ball which, when cold, will just pass through a ring, the ball will not do so when heated. The extent of expansion is very small, so as not to be perceived unless the apparatus be accurately made; but, so far as it goes, it is an unerring and inevitable effect. How it is brought about we do not know; but it would appear that the particles of metal are driven farther asunder by the accession of heat. If we have a bar of cast-iron at the temperature of the freezing-point, or 32°, and then heat it to the temperature of boiling water, *i.e.* 212°, its length will be increased about one-thousandth part of the whole; if it were of silver, the elongation would be about a five-hundredth part; and if of lead, a three-hundred and fiftieth; different metals possessing different expansive powers by the effect of heat.

But when we come to the case of liquids, we find that, not only do they expand by heat, but that they do so to a much greater extent than solids. Thus, mercury, when raised from 32° to 212°, expands about a fiftieth part, or fifty parts become fifty-one by the effect of the increase of heat; water expands about a twenty-eighth part; and alcohol about a ninth part. The last is a very extraordinary example, indicating that nine pints (or any other measure) of alcohol become ten by this increase of temperature.

Now it is found that, other things being equal, any given substance, say a piece of iron, will resume its former dimensions when the additional amount of heat which has been imparted to it is withdrawn; and this proceeds on such an invariable rule, that the enlargement of bulk in a heated body becomes an index of the increase of temperature to which it has been exposed. If the body be a liquid, the change of bulk, being larger in ratio, is more perceptible. The way in which this property becomes useful to man may be thus illustrated. Suppose that in the process of brewing it be found that fermentation goes on more favourably at one degree of heat than at any other either higher or lower. The brewer wishes to take a note, to make a memorandum, by which he may produce that same favourable temperature at a future brewing. How is he to effect this? The colour, the odour, the weight, if influenced at all, would be so to an extent too slight for his purpose. But let us imagine that he has a piece of any substance, say a metal rod, so susceptible to the influence of heat, that the length would be sensibly increased by the addition of a little of that agent. He might devise means for ascertaining its length when immersed in water at the freezing temperature, and also at the boiling temperature; and likewise when immersed in the fermenting liquor at a medium temperature; and might thenceforward use the metal rod as an indicator of the fermenting temperature; inferring that when the malt liquor is so heated as to give such and such a length to the iron rod immersed in it, that heat is the proper one for the process of fermentation.

We may suppose some such ideas as these to have passed through the mind of the philosopher who first constructed a thermometer; and that, knowing the superior expansibility of liquids, he next thought of using a liquid as the heat-measuring instrument. In the beginning of the seventeenth century, we hear of a thermometer being made, not indeed of liquid, but of air confined in a glass tube. Air, in being heated from 32° to 212°, increases its bulk about 37½ per cent., and therefore furnishes a still more conspicuous instance of expansion than liquids; but there are various reasons why air is not suited for such a purpose.

The first successful attempt to make a thermometer in which the expansible body should be a liquid, seems to have emanated from the Florentine academicians, who employed spirits of wine in the following manner:—A tube connected with a bulb was heated so as to expel a portion of air; and the open end of the tube was immersed in spirits of wine, which, as the bulb cooled, was forced up by atmospheric pressure into the stem and bulb. The bulb was then held downwards, and a flame applied to it, so as to boil the spirits and drive the remaining air from the tube. While the vapour was issuing from the end of the tube, the flame of a blow-pipe was applied to it, by which the glass was fused, and the end closed. The bulb and part of the tube were thus filled with spirits of wine, the upper portion of the tube being nearly a vacuum. Whenever, then, this glass vessel was exposed to various heats, either in liquids or in the open air, the spirit enlarged or contracted its bulk, as the case might be, and therefore occupied a greater or less height than before in the tube. The constructors made a mark to indicate the height to which the spirit rose when exposed to the cold of snow, and another mark, higher up, when exposed to the summer heat of Florence; and these two marks thus served in some measure as a guide.

[To be continued.]